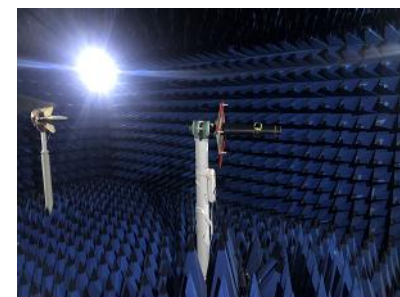


Test report of crown group GQ3286 antenna

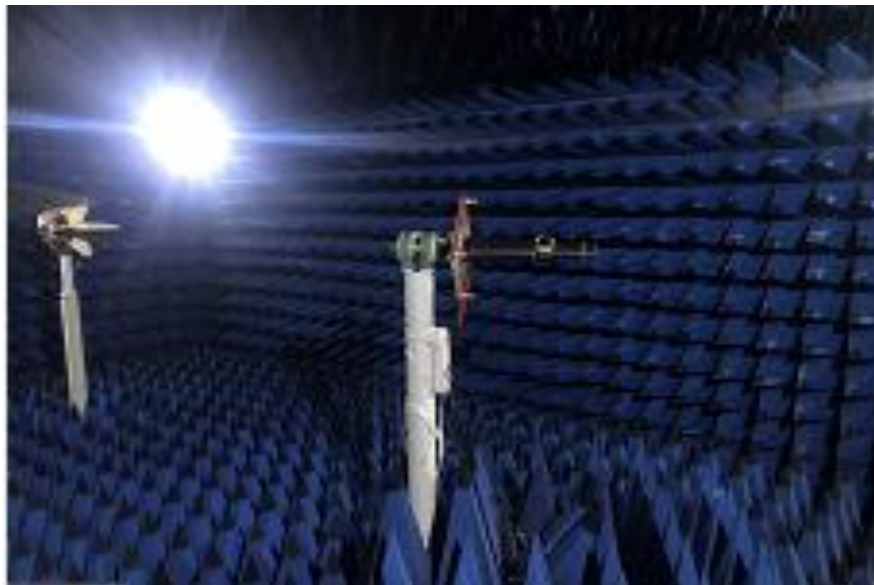
Radio frequency: Hong
Yuankai

Date: 2022-11-14



Project development environment

We are moving from the Internet age to the intelligent age, and the country is building a digital society and a smart city. In the next 5-10 years, both the consumer electronics market and the Internet of Things market have great development potential. The field of wireless communication is very diversified. In the future, Yusheng will strive to provide customers with professional-grade product solutions with market competitiveness by relying on the advantages of the customer platform of the main antenna business and its comprehensive strength.



Yusheng Communication's products cover almost all antenna applications of wireless terminal equipment, Including automobile antenna, high-precision surveying and mapping antenna, unmanned aerial vehicle ground and satellite data navigation, high-precision positioning antenna, wireless transmission of medical equipment, consumer antenna (mobile phone antenna, PAD, notebook computer antenna), Base station/indoor distributed antenna, smart wearable antenna (smart watch, TWS headset), security home antenna and various smart device antennas for wireless data transmission and wireless control, etc.

1

Brief introduction of project debugging

2

Report version outline

3

Active parameters of antenna

4

Passive parameters of antenna

5

Treatment and Improvement of Antenna Environment

6

Summary & Additional Notes

Brief introduction of project debugging

Model	Flat plate				
Plate type	Motherboard				
Frequency band and antenna material	Main antenna	Frequency band		Material	
		2G	GSM 850/900/1800/1900		FPC
		3G	WCDMA B1/2/4/5/8		
	4G	LTE B1/2/3/4/5/7/8/12/17/20/26/28 AB 38/39/40/41			
	Other antennas	GWB	1575.42 MHz/2.45 GHz/5.8 GHz		FPC
		DRX	Have		FPC + coaxial line
Performance requirements	Execute according to customer requirements				

**Report version
outline**

Report version	Reporting time	Problems solved in this antenna research and development
V1.0	20221102	Test report of whole machine (acknowledgement)
V1.1	20221109	Test report of the whole machine (add some frequency band test data)

Active parameters of main antenna

Test	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
TRP (dBm)	26.53	26.79	27.11	24.69	24.58	24.52
TIS (dBm)			-100.18			-100.04

Test	EGSM 900			DCS 1800		
Channel	128	190	251	512	661	810
TRP (dBm)	26.62	26.38	26.15	25.02	24.81	24.57
TIS (dBm)			-100.13			-100.16

Active parameters of main antenna

Test	WCDMA_I			WCDMA_II		
Channel	10562	10700	10838	9662	9800	9938
TRP (dBm)	15.27	15.18	15.06	16.02	15.73	15.51
TIS (dBm)			-102.01			-102.25

Test	WCDMA_IV			WCDMA_V		
Channel	1537	1638	1738	4357	4408	4458
TRP (dBm)	17.01	17.09	17.15	17.02	17.15	17.26
TIS (dBm)			-102.39			-101.23

Test	WCDMA_VIII		
Channel	2937	3013	3088
TRP (dBm)	17.05	16.54	16.12
TIS (dBm)			-101.08

Active main antenna

Test	FDD B1			FDD B2		
Channel	18050	18300	18550	18750	18950	19150
TRP (dBm)	16.07	15.55	15.04	17.25	17.01	16.73
TIS (dBm)			-89.05			-89.57

Test	FDD B3			FDD B4		
Channel	19250	19575	19900	20000	20175	20350
TRP (dBm)	18.15	18.01	17.87	18.02	18.11	18.19
TIS (dBm)			-90.01			-90.14

Test	FDD B5			FDD B7		
Channel	20450	20525	20600	20800	21100	21400
TRP (dBm)	17.82	18.15	18.31	16.61	16.35	16.09
TIS (dBm)			-89.03			-87.01



Active main antenna

Test	FDD B8			FDD B12		
Channel	21500	21650	21750	23035	23095	23155
TRP (dBm)	18.04	17.51	17.02	15.05	15.16	15.35
TIS (dBm)			-88.08			-90.11

Test	FDD B17			FDD B20		
Channel	23780	23790	23800	24200	24300	24400
TRP (dBm)	15.15	15.39	15.62	17.75	18.01	18.22
TIS (dBm)			-90.02			-91.05

Test	FDD B26			FDD B28A		
Channel	26740	26865	26990	27260	27360	27460
TRP (dBm)	17.51	17.79	18.02	15.52	15.81	16.08
TIS (dBm)			-89.08			-89.56

Active main antenna

Test	FDD B28B		
Channel	27410	27510	27610
TRP (dBm)	15.77	16.01	16.29
TIS (dBm)			-90.04

Test	TDD B38		
Channel	37850	38000	38150
TRP (dBm)	16.36	16.17	16.03
TIS (dBm)			-86.61

Test	TDD B40			FDD B41		
Channel	38750	39150	39550		40620	
TRP (dBm)	17.75	18.29	18.71		16.16	
TIS (dBm)			-90.03		-87.02	



Active parameters of main antenna-
bright screen

Test	GSM 850			EGSM 900		
Channel	128	190	251	128	190	251
TRP (dBm)	26.25	26.53	26.77	26.55	26.29	26.06
TIS (dBm)			-98.09			-98.01

Test	FDD B5			FDD B8		
Channel	20450	20525	20600	21500	21650	21750
TRP (dBm)	18.12	18.01	17.83	18.01	17.04	16.11
TIS (dBm)			-86.25			-86.02

Test	FDD B12			FDD B20		
Channel	23035	23095	23155	24200	24300	24400
TRP (dBm)	15.01	15.12	15.23	17.16	17.69	18.02
TIS (dBm)			-87.08			-89.01

WIFI Active Parameters

Test	5.8 WIFI-A			2.4 WIFI-B		
Channel	149	157	165	1	6	11
TRP (dBm)	10.04	10.23	10.09	13.53	13.75	14.01
TIS (dBm)			-68.68			-85.05

Test	2.4 WIFI-G			2.4 WIFI-N		
Channel	1	6	11	1	7	13
TRP (dBm)	13.01	13.26	13.52	13.03	13.19	13.28
TIS (dBm)			-70.03			-68.01

Antenna gain

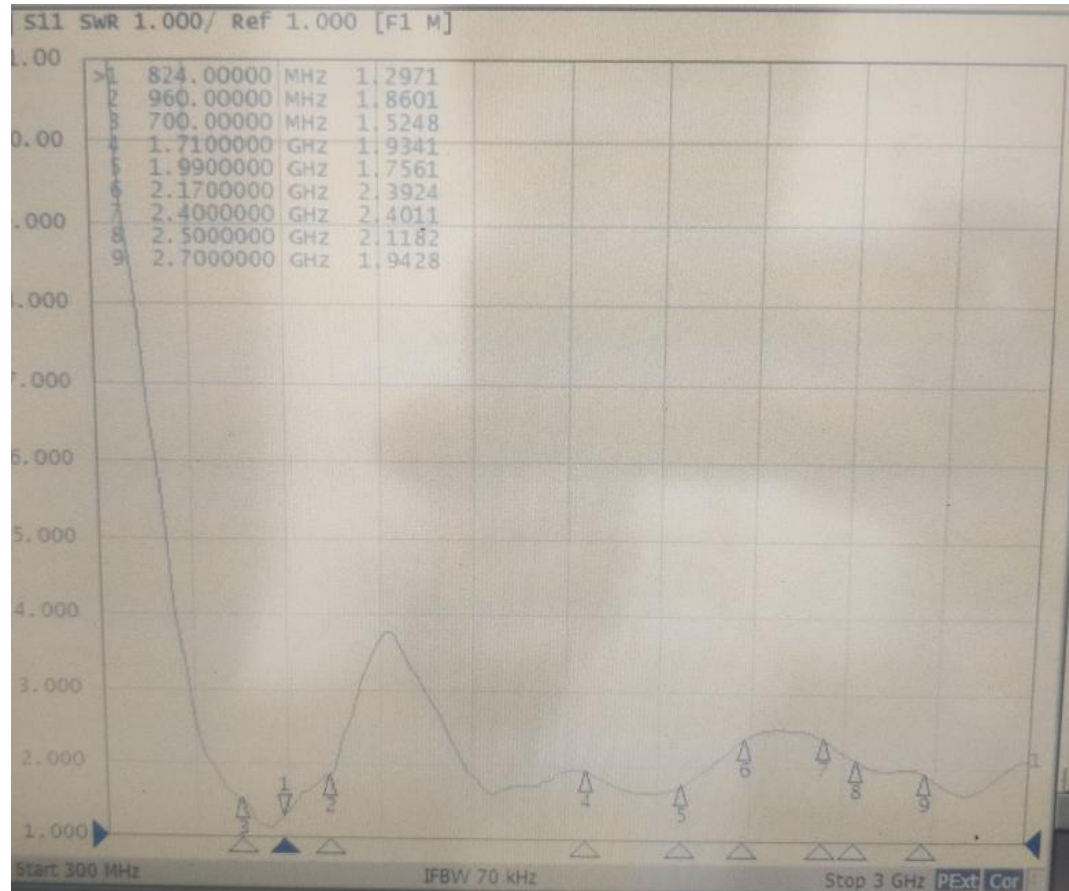
Band	Gain (MAX)
GSM850	0.59
EGSM900	0.63
DCS1800	1.02
PCS1900	1.05
WCDMA B1	1.09
WCDMA B2	1.05
WCDMA B4	0.98
WCDMA B5	0.59
WCDMA B8	0.63
Band 1	1.09
Band 2	1.05
Band 3	1.02
Band 4	0.98
Band 5	0.59
Band 7	1.15
Band 8	0.63

Band	Gain (MAX)
Band 12	0.43
Band 17	0.42
Band 20	0.59
Band 26	0.59
Band 28A	0.44
Band 28B	0.44
Band 38	1.16
Band 40	1.10
Band 41	1.17
GPS	0.94
2.4 WiFi	1.11
BT	1.11
5.8 WiFi	1.23

Passive parameters of main antenna

Passive Test

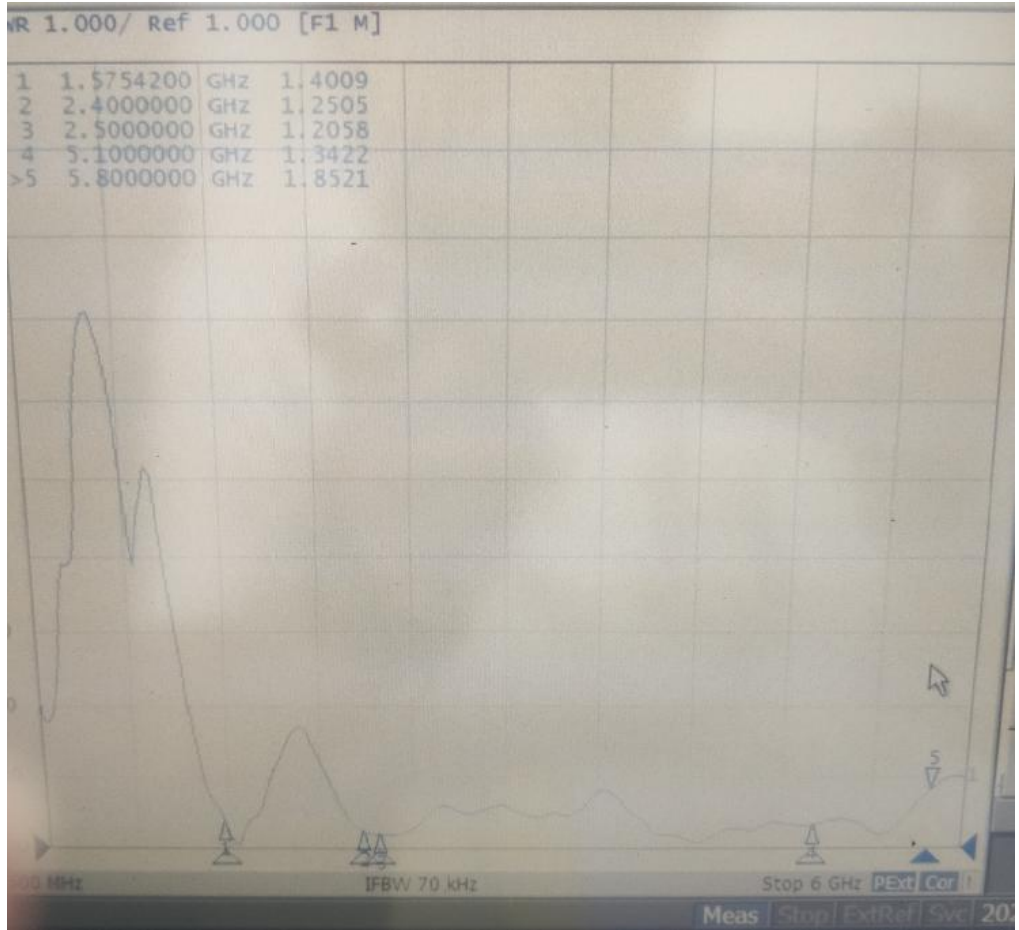
Freq (MHz)	Effi (%)	Freq (MHz)	Effi (%)
700.0	23.1%	2100.0	29.3%
740.0	24.5%	2140.0	27.5%
780.0	25.7%	2180.0	25.7%
820.0	32.5%	2220.0	26.9%
860.0	34.1%	2260.0	28.4%
900.0	35.8%	2300.0	30.5%
940.0	34.3%	2340.0	33.1%
980.0	33.1%	2380.0	35.4%
1700.0	40.2%	2420.0	38.1%
1740.0	41.5%	2460.0	37.2%
1780.0	42.6%	2500.0	36.1%
1820.0	41.2%	2540.0	35.2%
1860.0	40.1%	2580.0	34.1%
1900.0	38.3%	2620.0	32.9%
1940.0	36.5%	2660.0	31.3%
1980.0	35.2%	2700.0	30.2%
2020.0	33.4%		
2060.0	31.2%		



Passive parameters of four-in-one antenna

Passive Test

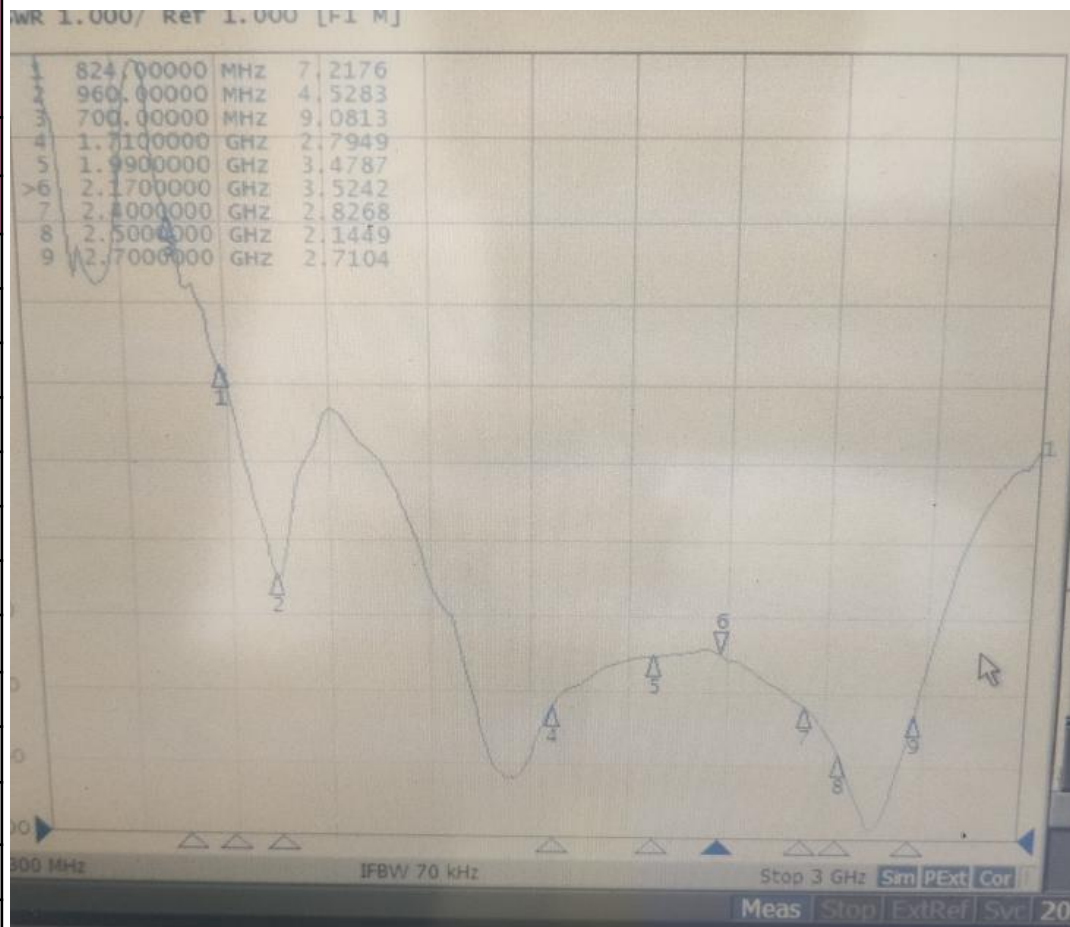
Freq (MHz)	Effi (%%)	Freq (MHz)	Effi (%%)
1560.0	35.1%	5100.0	44.5%
1565.0	35.7%	5150.0	45.1%
1570.0	36.2%	5200.0	45.6%
1575.0	36.6%	5250.0	46.1%
1580.0	36.3%	5300.0	46.5%
1585.0	35.8%	5350.0	45.8%
1590.0	35.2%	5400.0	45.3%
		5450.0	44.5%
		5500.0	43.9%
2400.0	41.2%	5550.0	43.2%
2420.0	42.3%	5600.0	42.7%
2440.0	43.5%	5650.0	43.2%
2460.0	44.4%	5700.0	44.5%
2480.0	45.3%	5750.0	45.4%
2500.0	43.9%	5800.0	45.9%



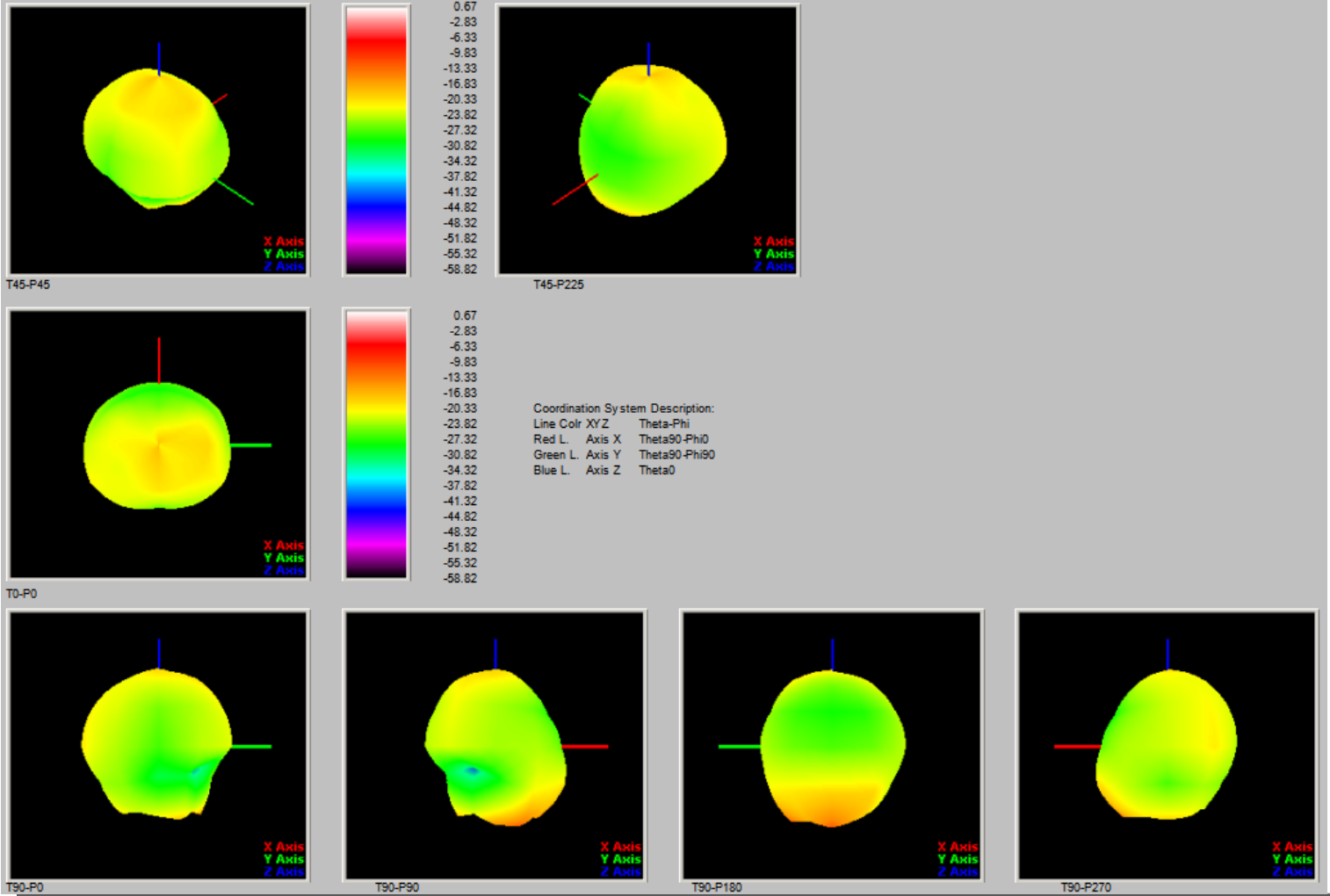
Diversity Antenna Passive Parameter

Passive Test

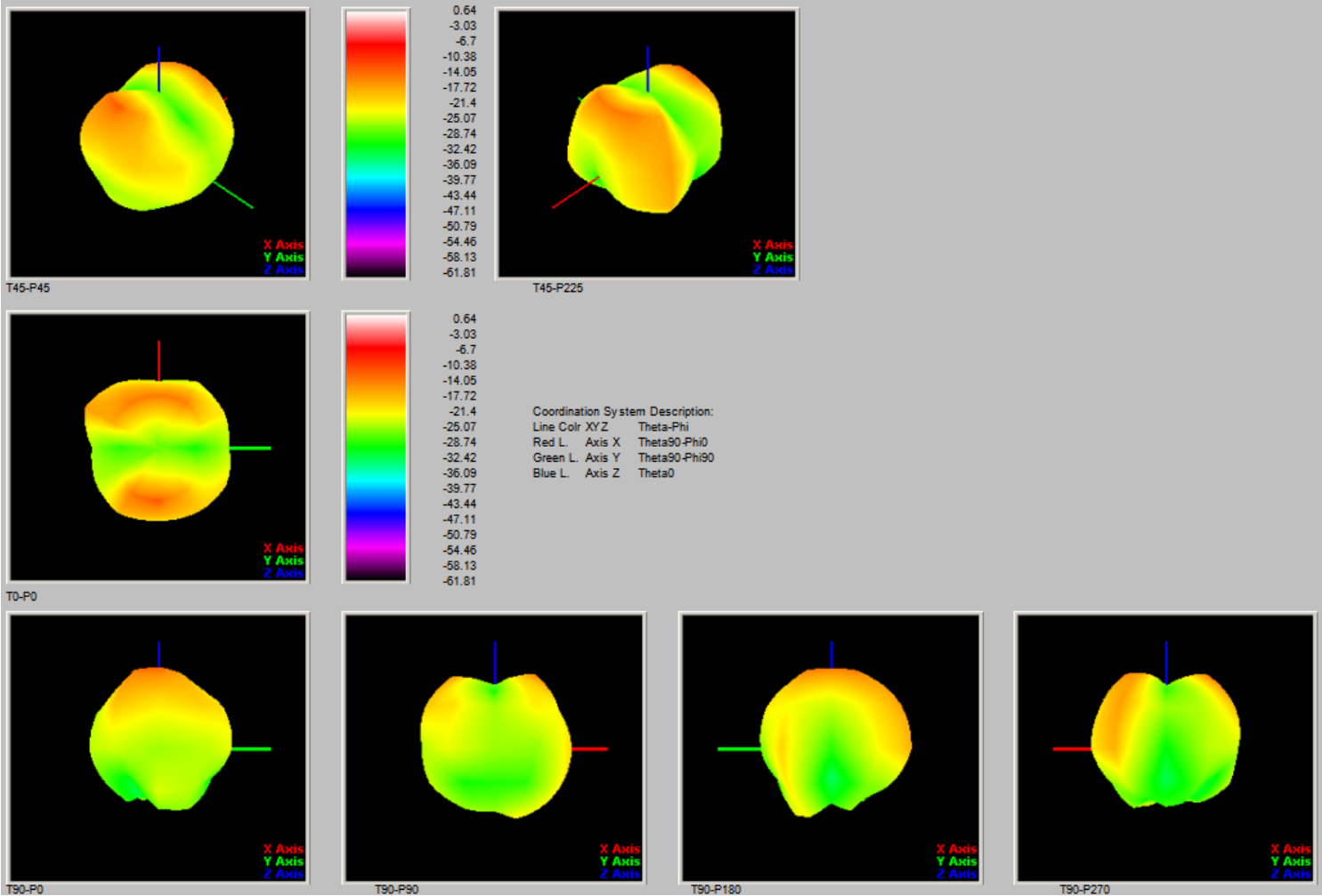
Freq (MHz)	Effi (%)	Freq (MHz)	Effi (%)
1700.0	25.1%	2350.0	27.9%
1750.0	26.2%	2400.0	27.1%
1800.0	26.5%	2450.0	26.5%
1850.0	27.3%	2500.0	26.9%
1900.0	27.2%	2550.0	27.5%
1950.0	26.4%	2600.0	28.2%
2000.0	25.7%	2650.0	27.1%
2050.0	25.1%	2700.0	26.5%
2100.0	25.2%		
2150.0	26.3%		
2200.0	27.5%		
2250.0	28.4%		
2300.0	29.3%		



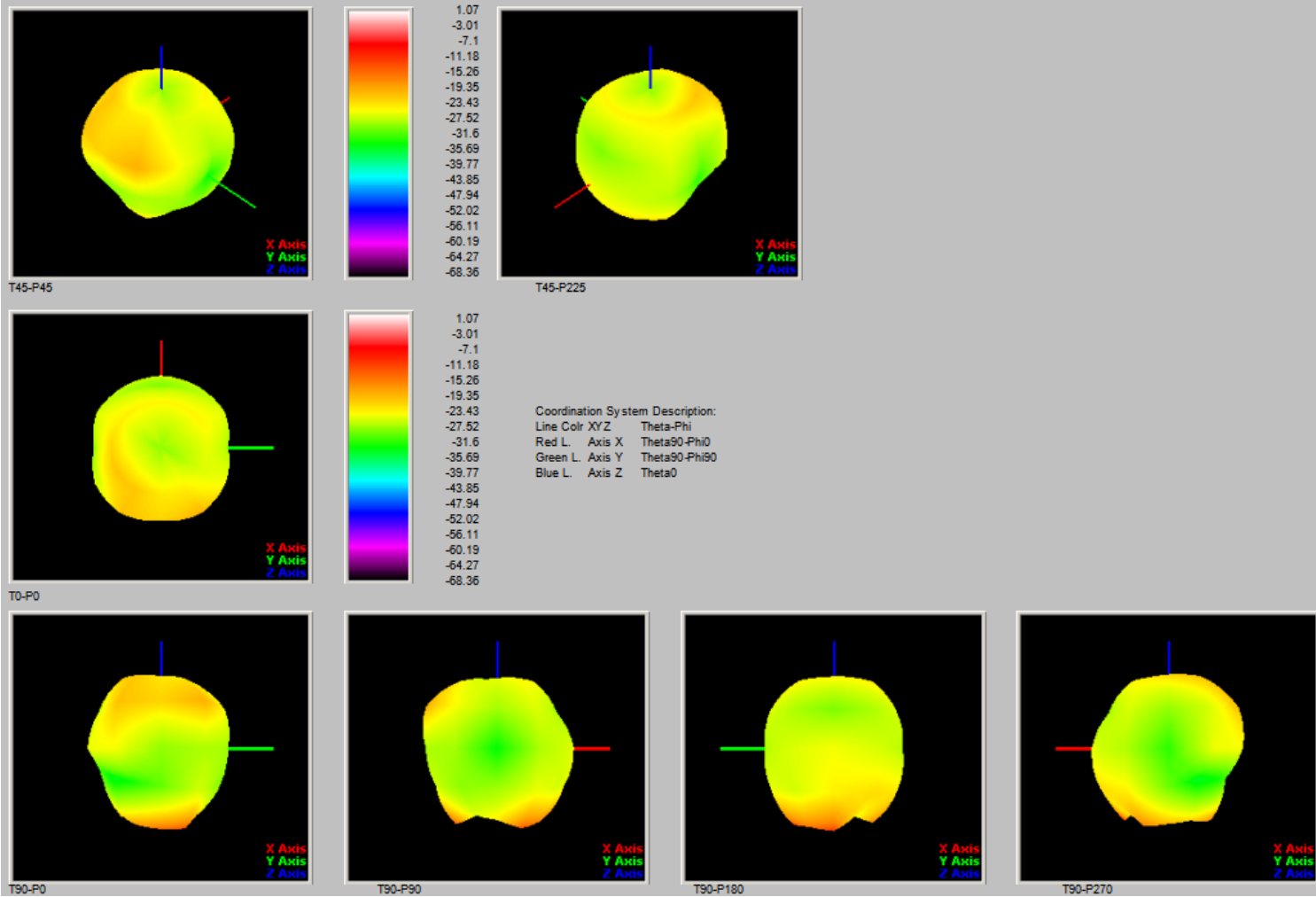
Passive Parameters-Apple Chart- 824MHz-880MHz



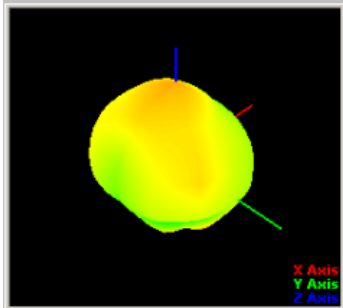
Passive Parameters-Apple Chart- 880MHz-960MHz



Passive Parameters-Apple Chart- 1710MHz-1880MHz



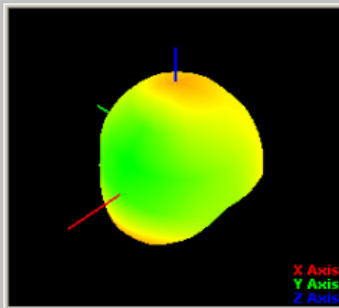
Passive Parameters-Apple Chart- 1880MHz-1990MHz



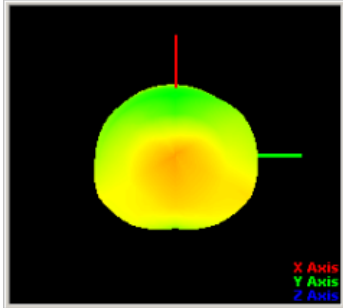
T45-P45



1.17
-2.55
-6.27
-9.99
-13.72
-17.44
-21.16
-24.88
-28.6
-32.32
-36.04
-39.77
-43.49
-47.21
-50.93
-54.65
-58.37
-62.09



T45-P225

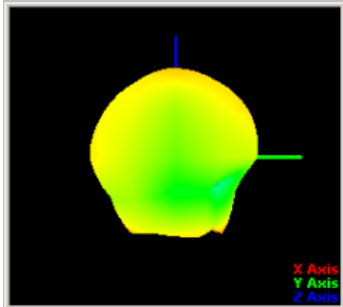


T0-P0

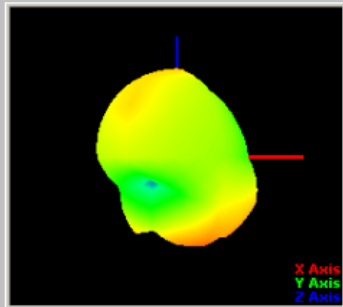


1.17
-2.55
-6.27
-9.99
-13.72
-17.44
-21.16
-24.88
-28.6
-32.32
-36.04
-39.77
-43.49
-47.21
-50.93
-54.65
-58.37
-62.09

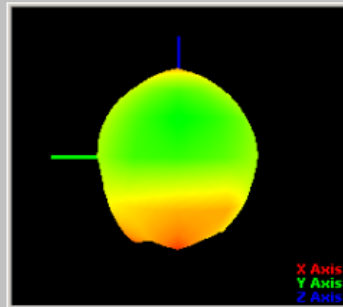
Coordination System Description:
Line Color XYZ Theta-Phi
Red L. Axis X Theta90-Phi0
Green L. Axis Y Theta90-Phi90
Blue L. Axis Z Theta0



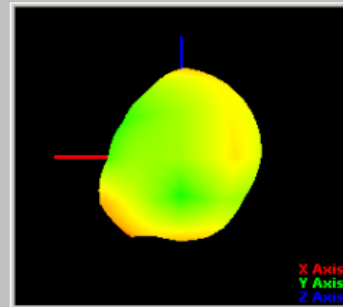
T90-P0



T90-P90

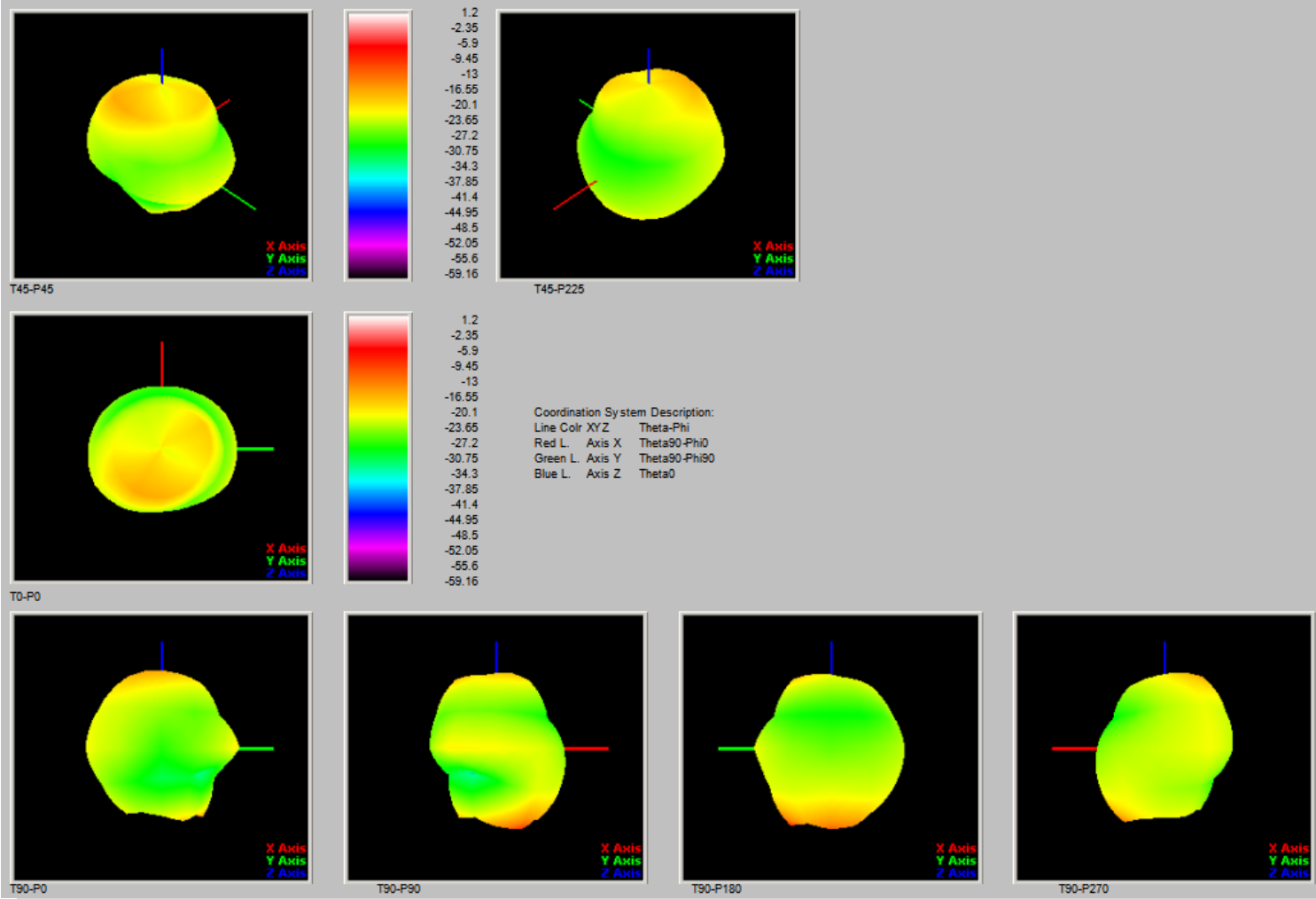


T90-P180

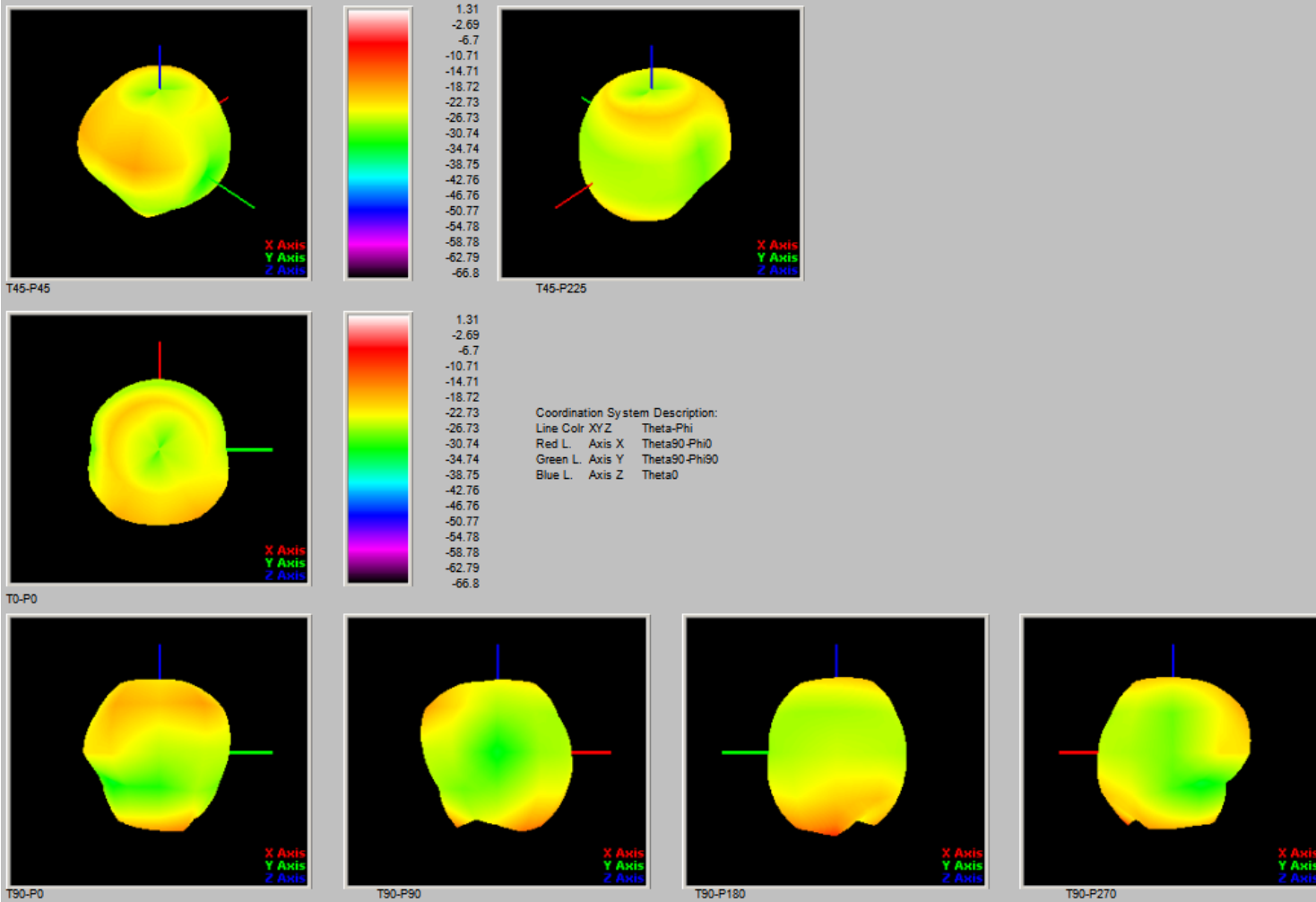


T90-P270

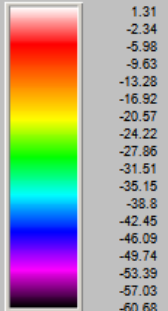
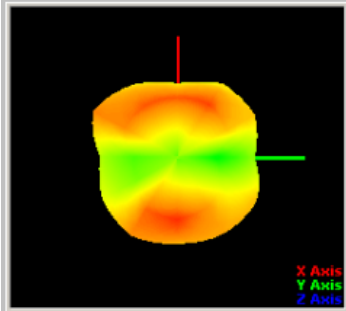
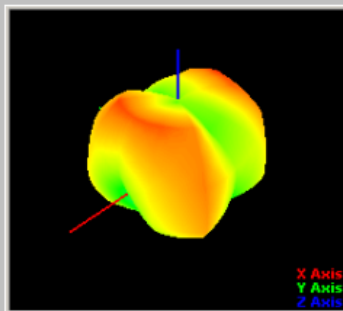
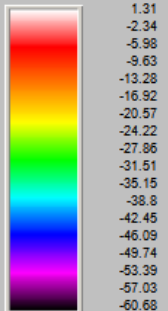
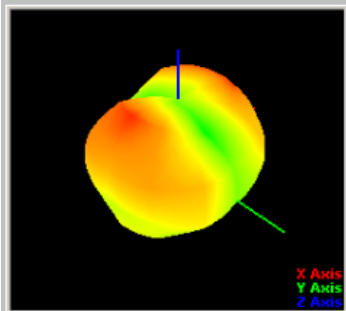
Passive Parameters-Apple Chart- 1990MHz-2170MHz



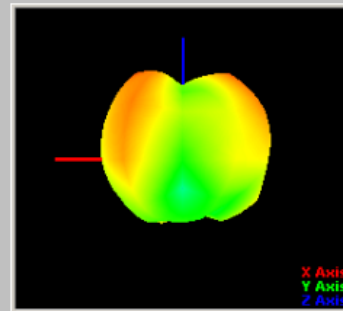
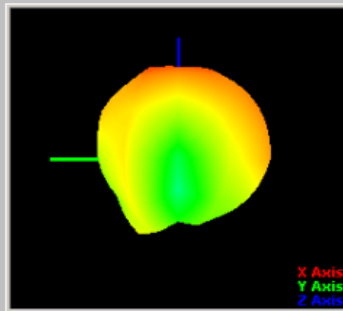
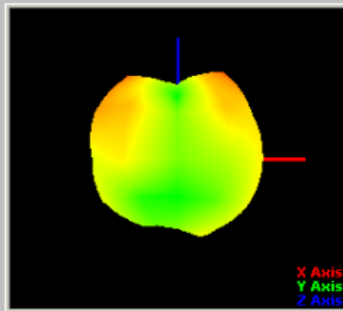
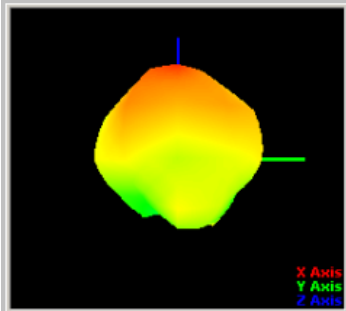
Passive Parameters-Apple Chart- 2300MHz-2400MHz



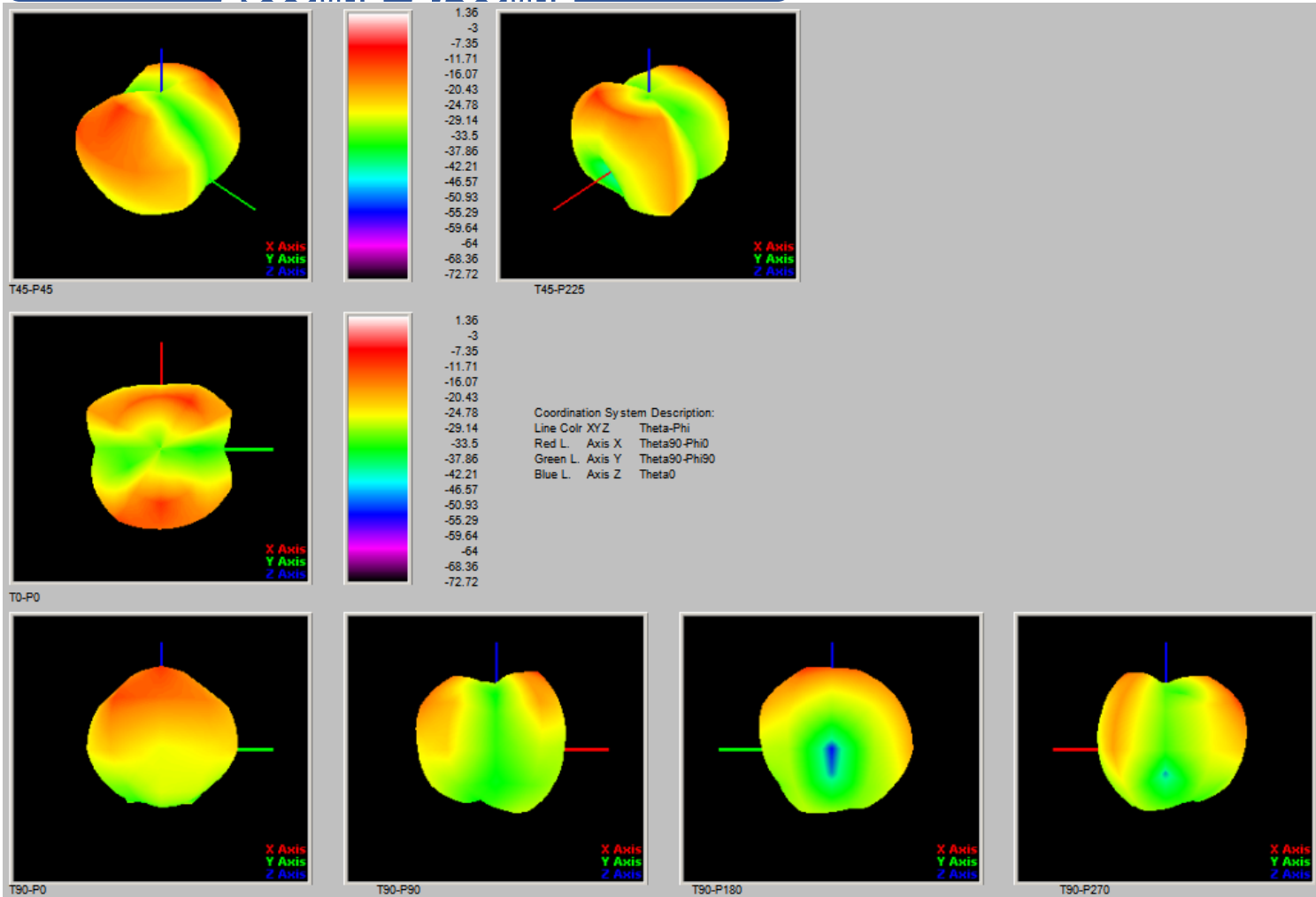
Passive Parameters-Apple Chart- 2400MHz-2500MHz



Coordination System Description:
Line Color XYZ Theta-Phi
Red L. Axis X Theta90-Phi0
Green L. Axis Y Theta90-Phi90
Blue L. Axis Z Theta0

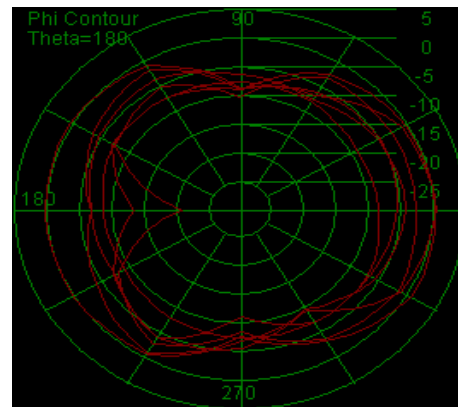
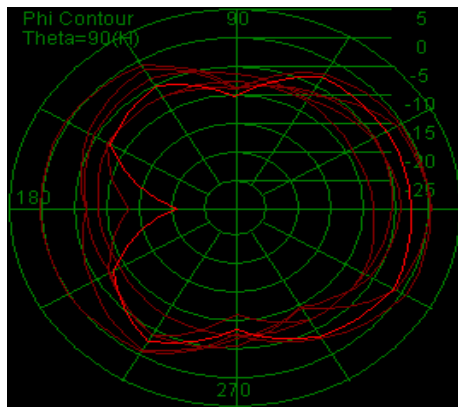
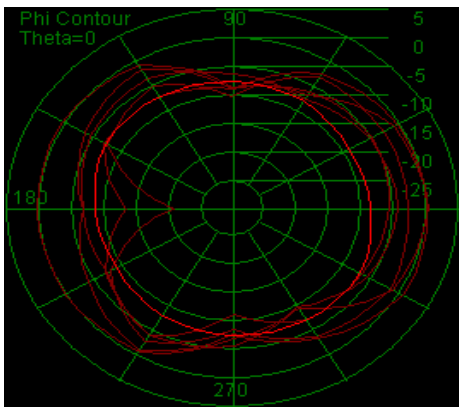


Passive Parameters-Apple Chart- 2500MHz-2700MHz

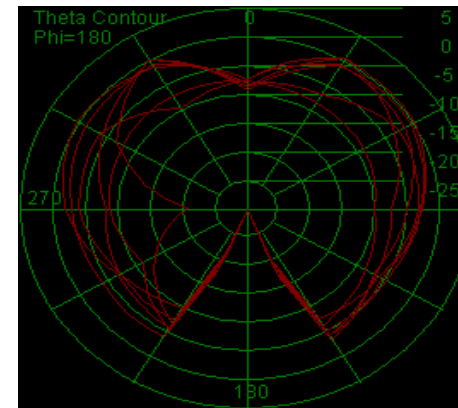
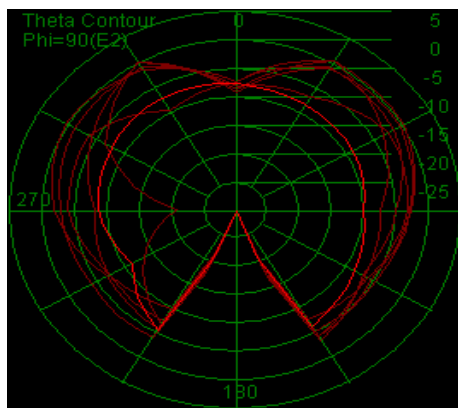
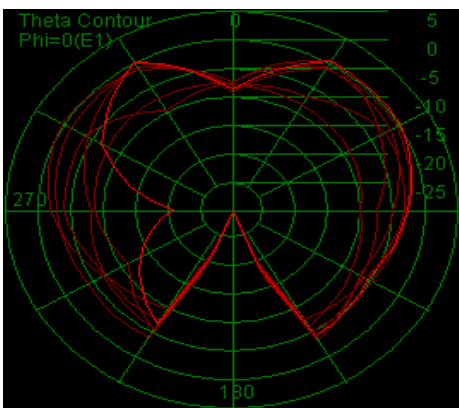


Passive parameters-plan-
700MHz-824MHz

Horizontal:

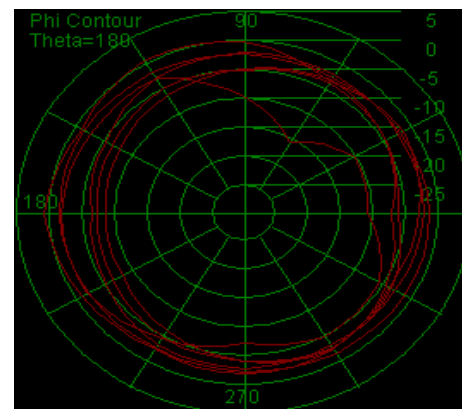
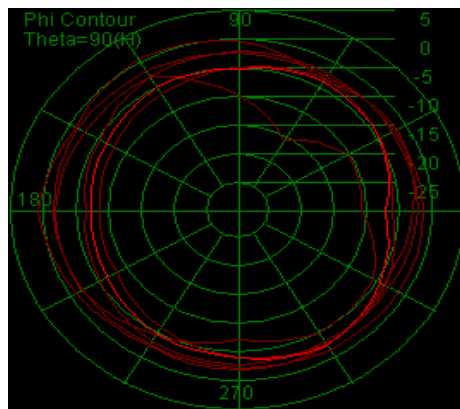
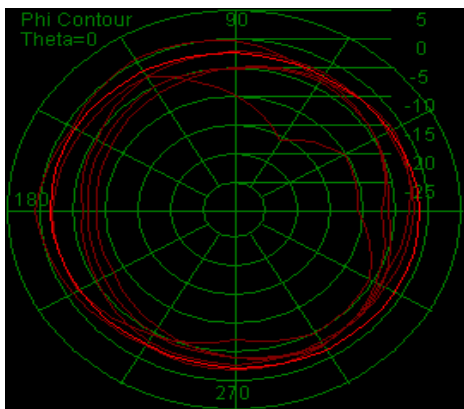


Vertical:

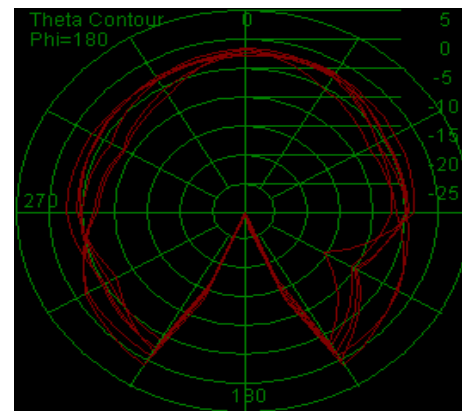
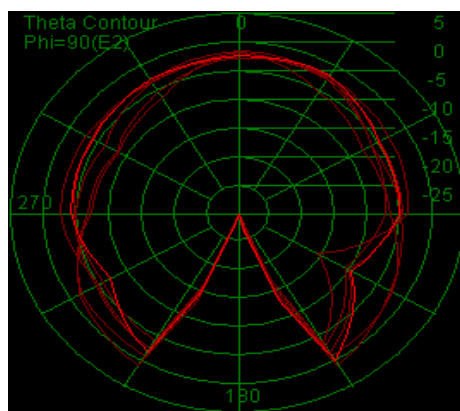
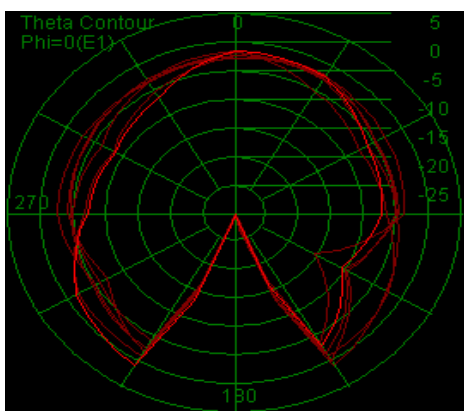


**Passive Parameters-Plan-
824MHz-880MHz**

Horizontal:

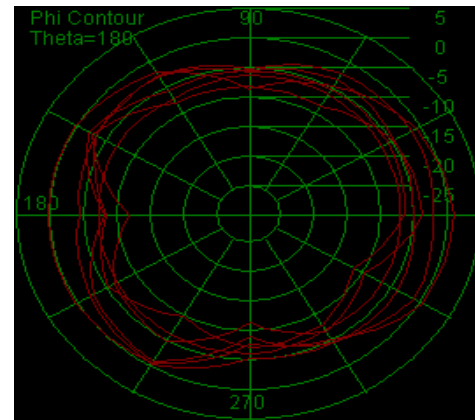
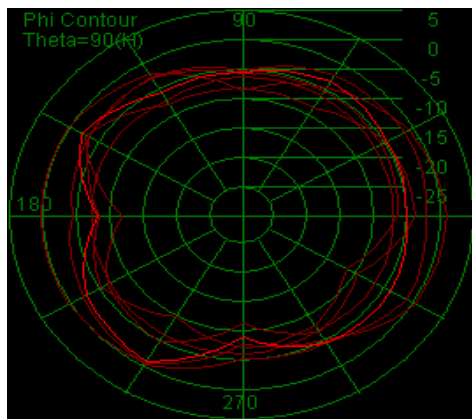
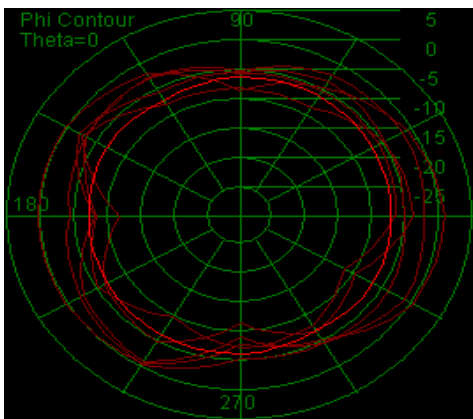


Vertical:

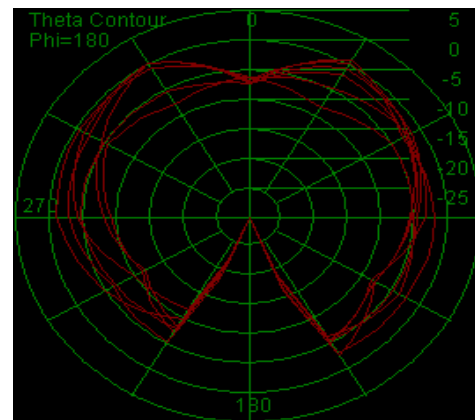
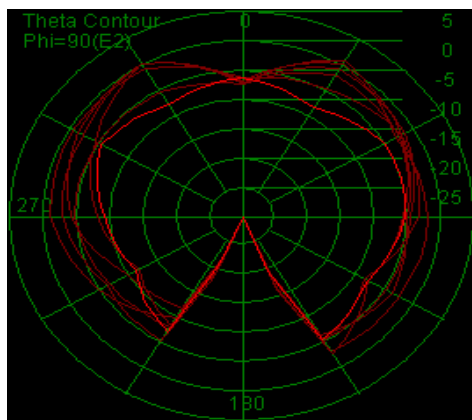
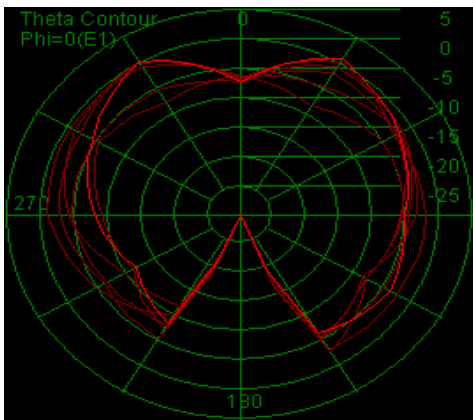


**Passive Parameters-Plan-
880MHz-960MHz**

Horizontal:

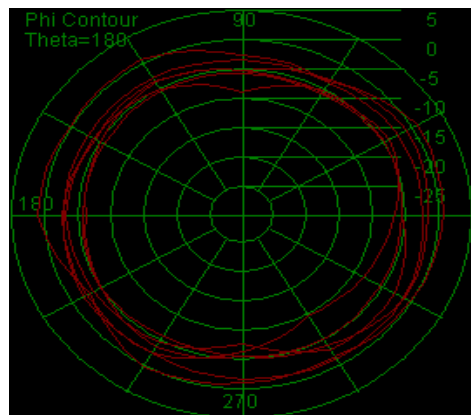
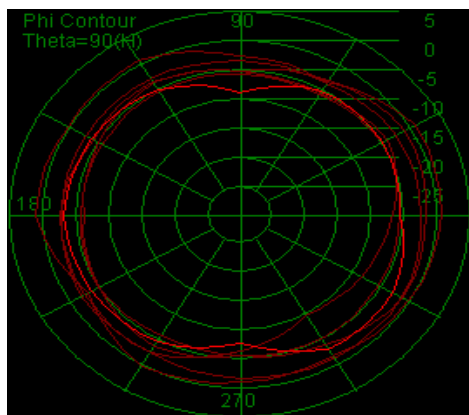
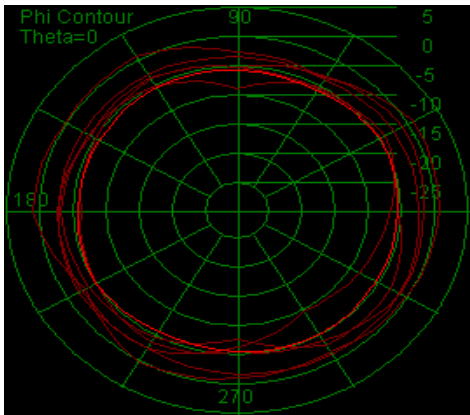


Vertical:

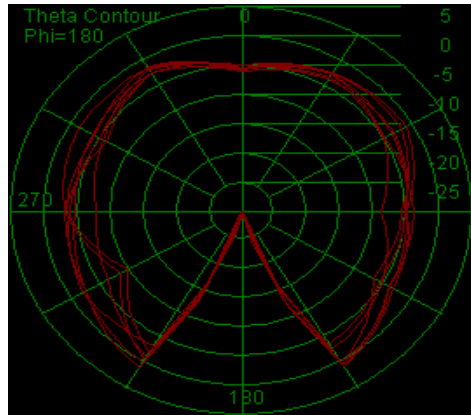
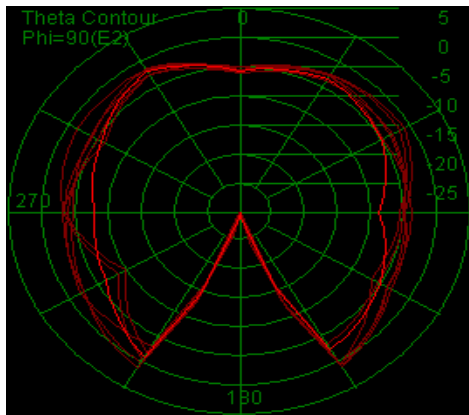
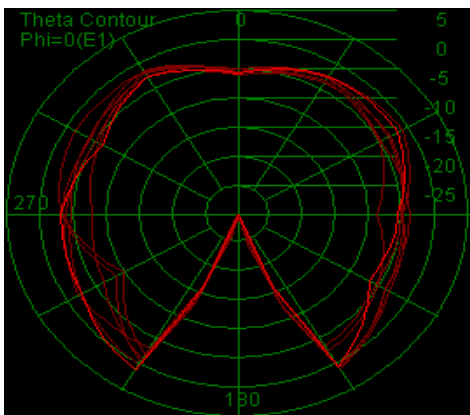


**Passive Parameters-Plan-
1710MHz-1880MHz**

Horizontal:

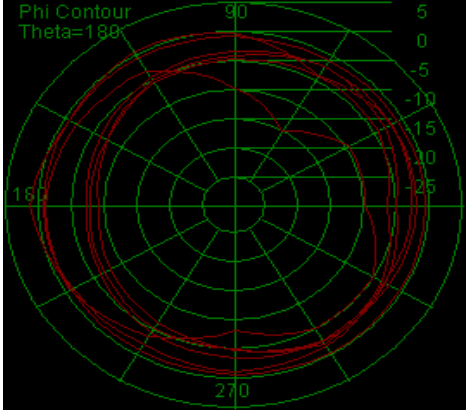
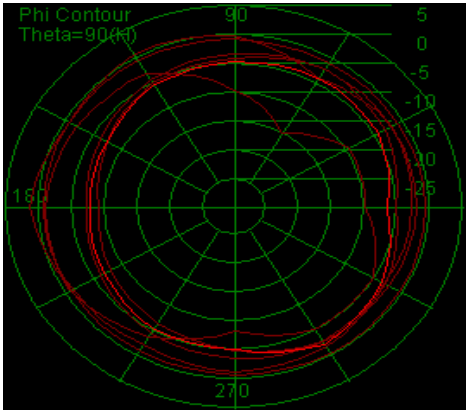
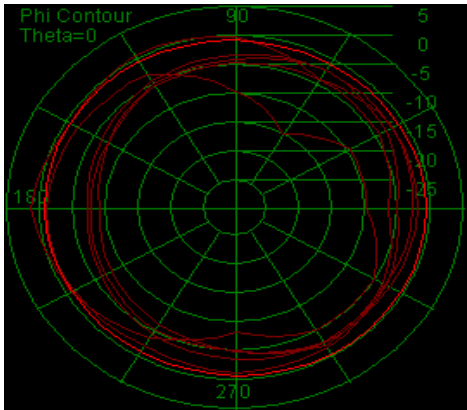


Vertical:

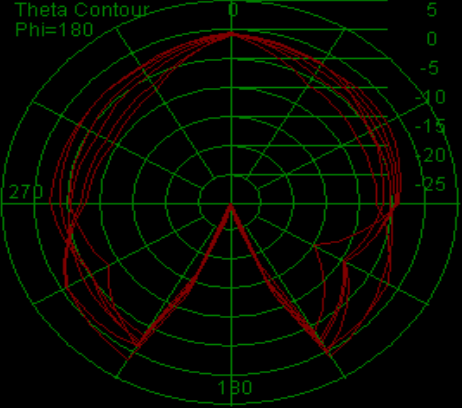
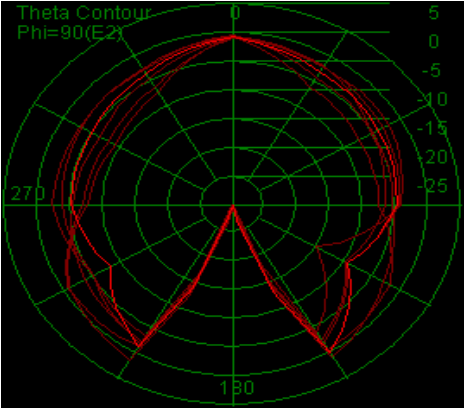
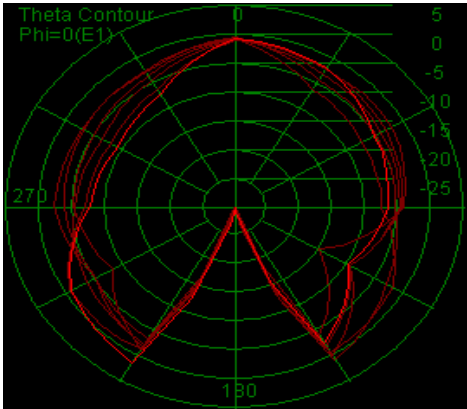


**Passive Parameters-Plan-
1880MHz-1990MHz**

Horizontal:

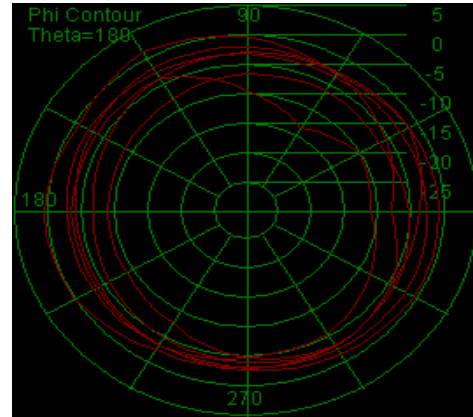
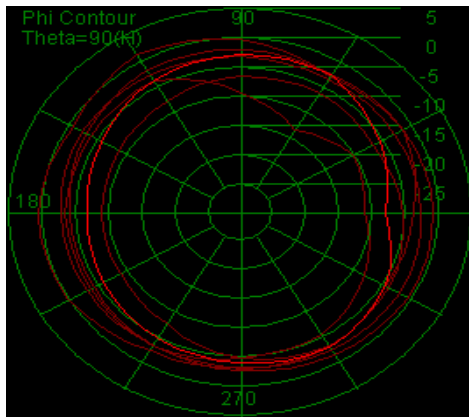
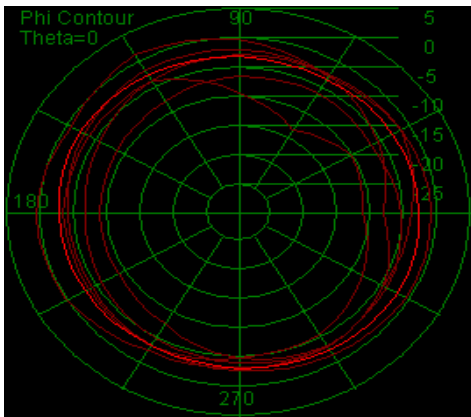


Vertical:

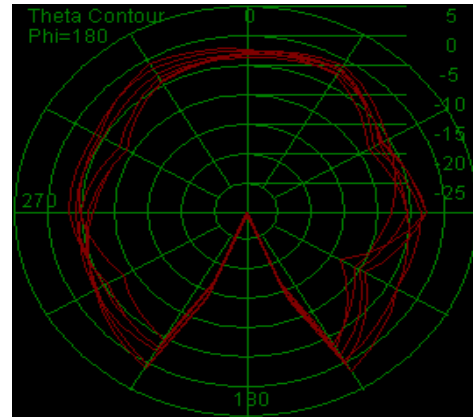
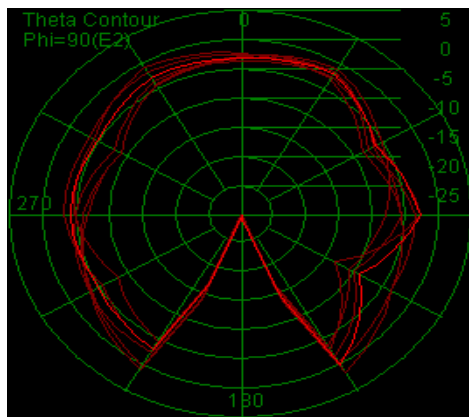
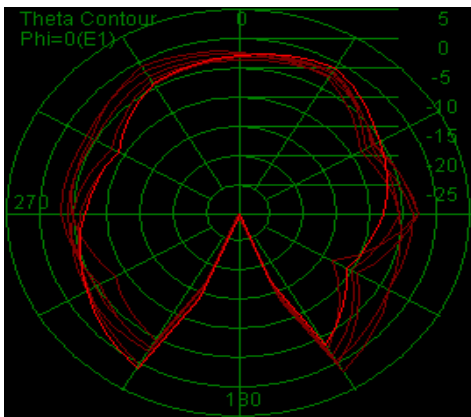


Passive Parameters-Plan-1990MHz-2170MHz

Horizontal:

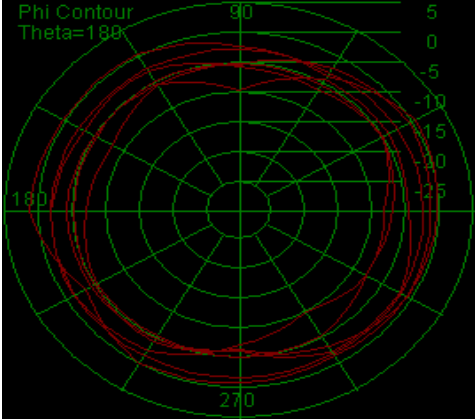
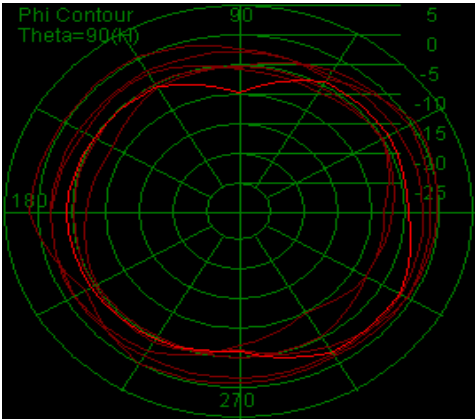
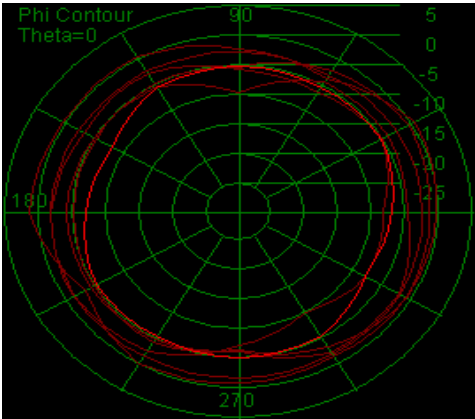


Vertical:

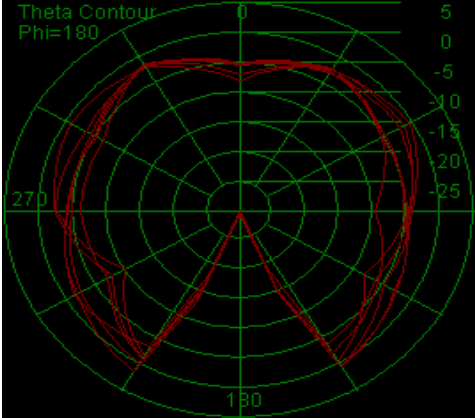
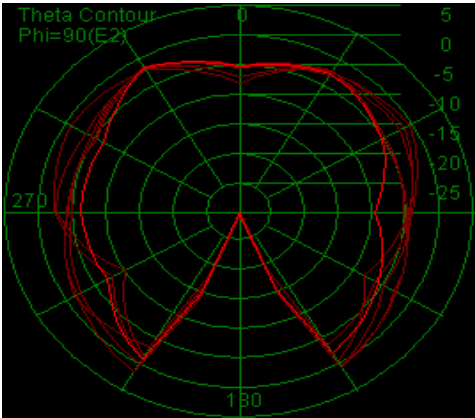
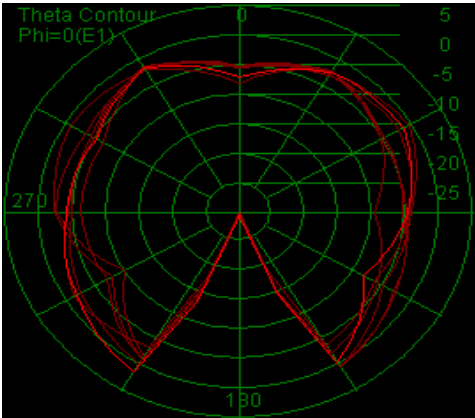


**Passive parameters-plan-
2300MHz-2400MHz**

Horizontal:

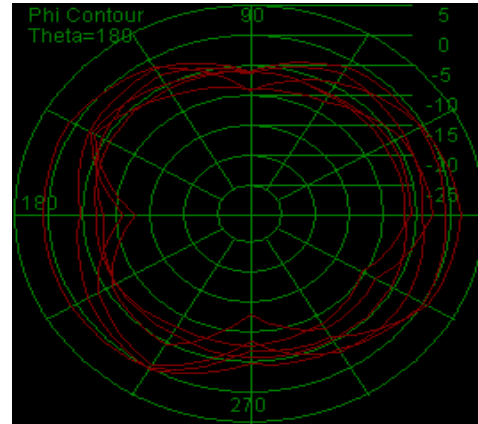
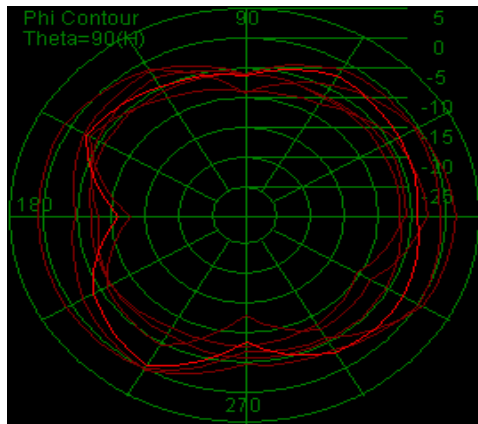
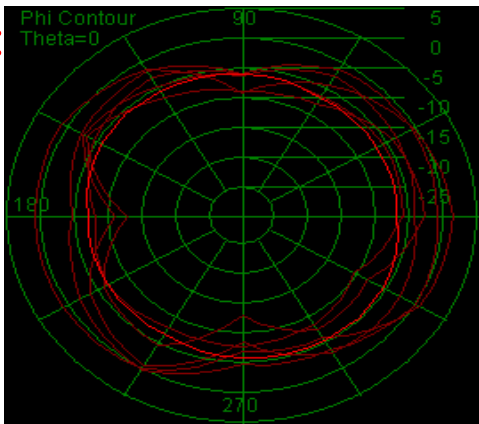


Vertical:

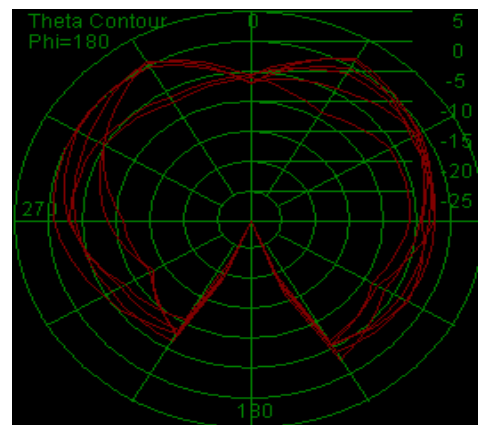
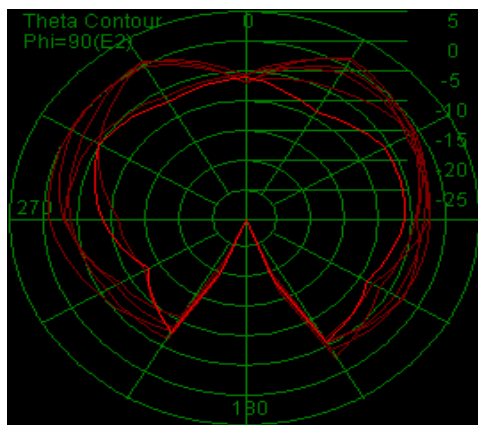
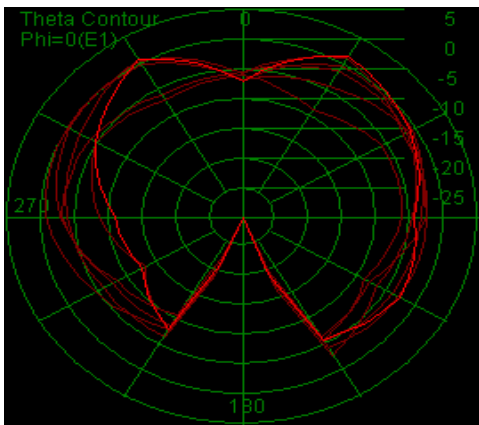


**Passive parameters-plan-
2400MHz-2500MHz**

Horizontal:

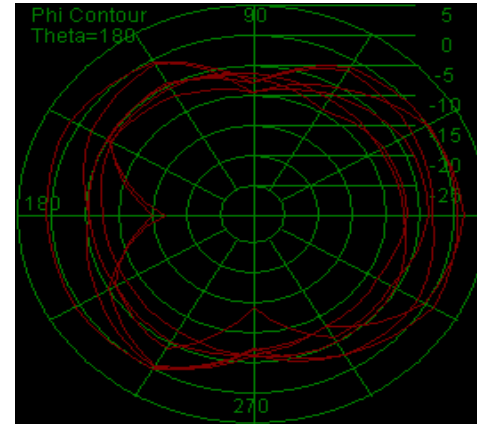
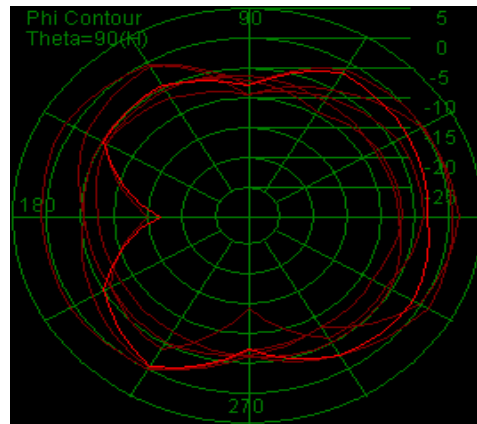
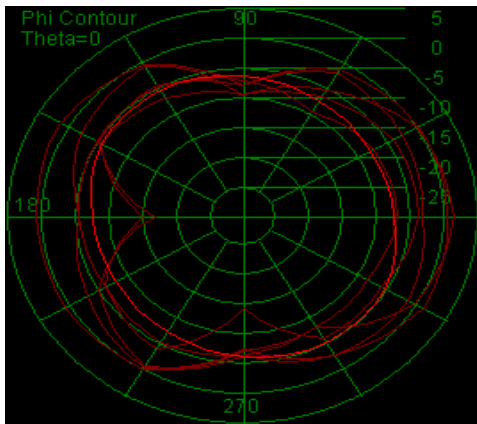


Vertical:

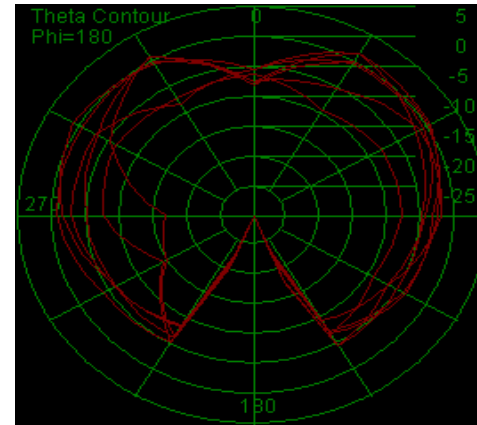
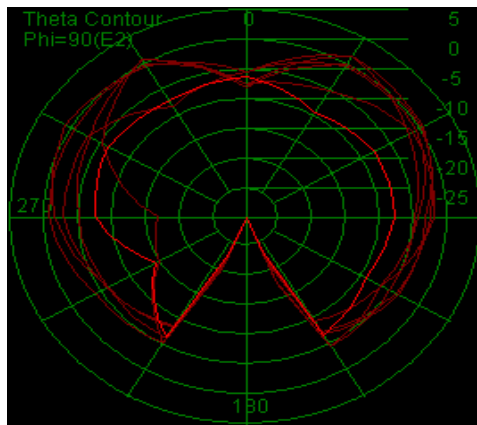
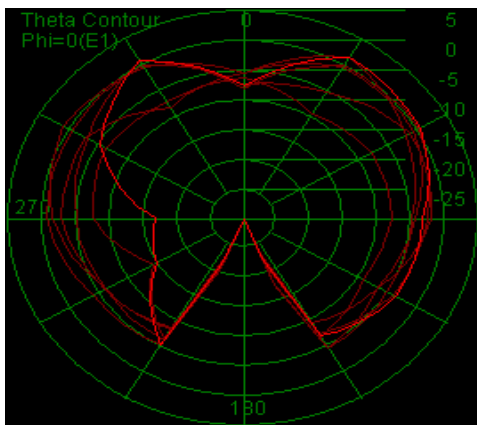


Passive parameters-plan-
2500MHz-2700MHz

Horizontal:

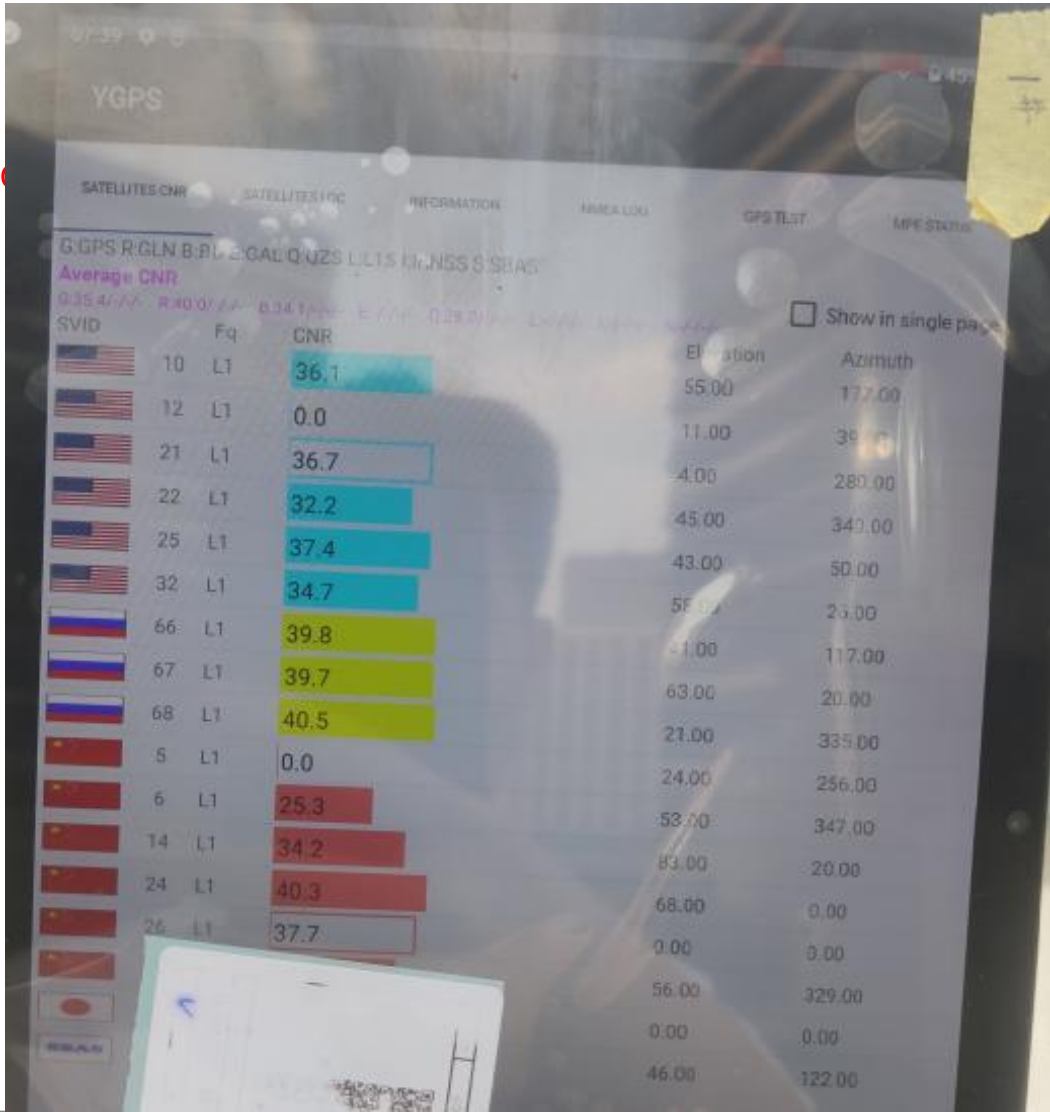


Vertical:



**GPS test
asterisk chart**

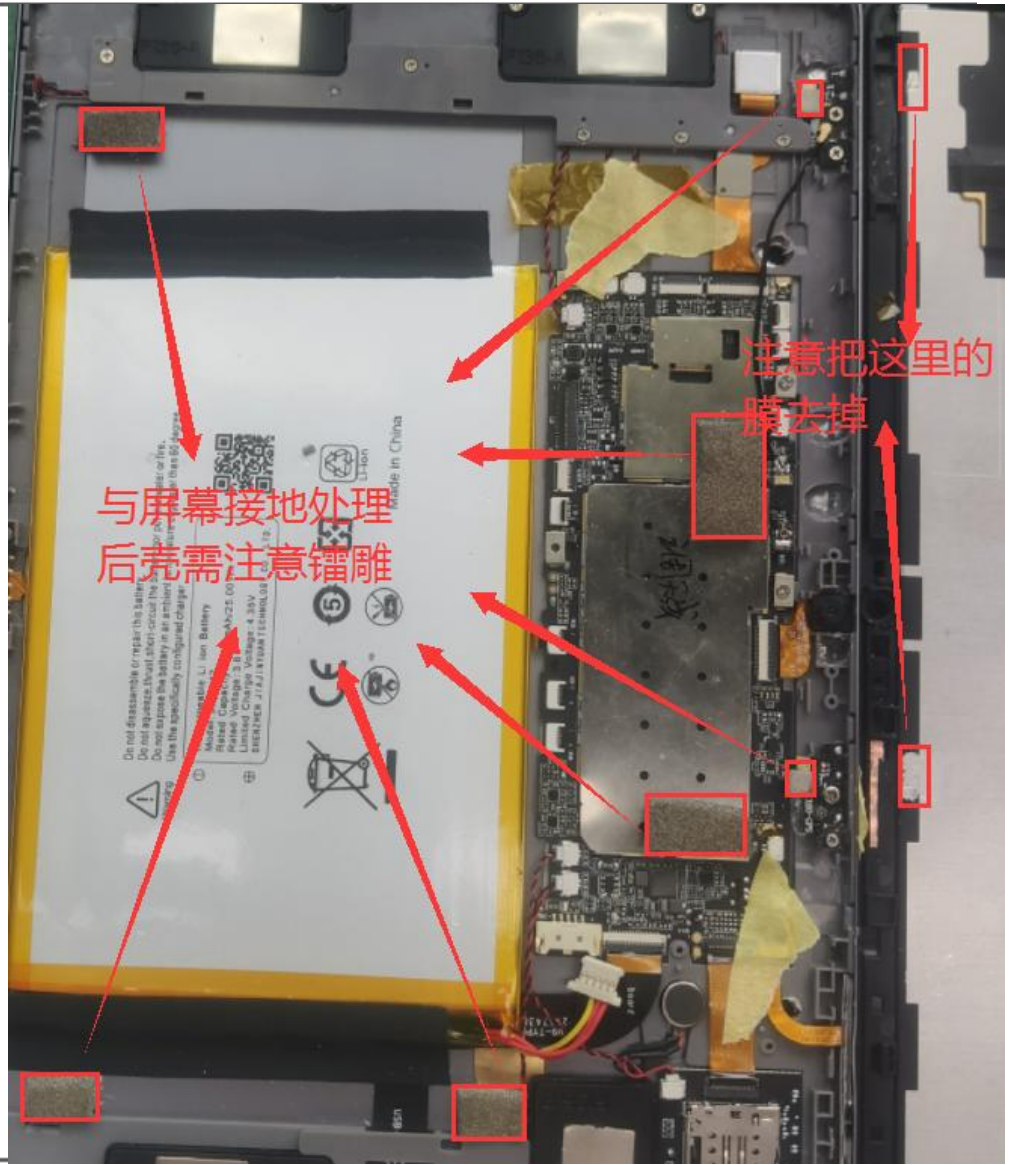
1. In the open area
Test on lawn



Treatment and Improvement of Antenna Environment



主板与后壳接地处理
注意后壳需镭雕



与屏幕接地处理
后壳需注意镭雕

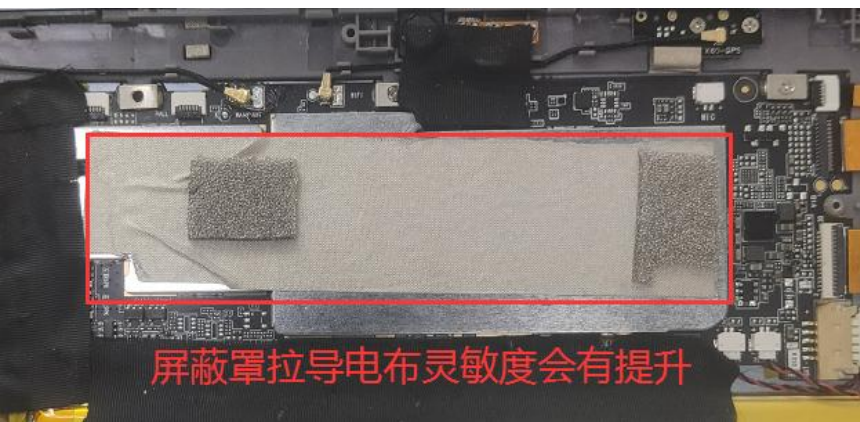
注意把这里的膜去掉

Treatment and Improvement of Antenna Environment

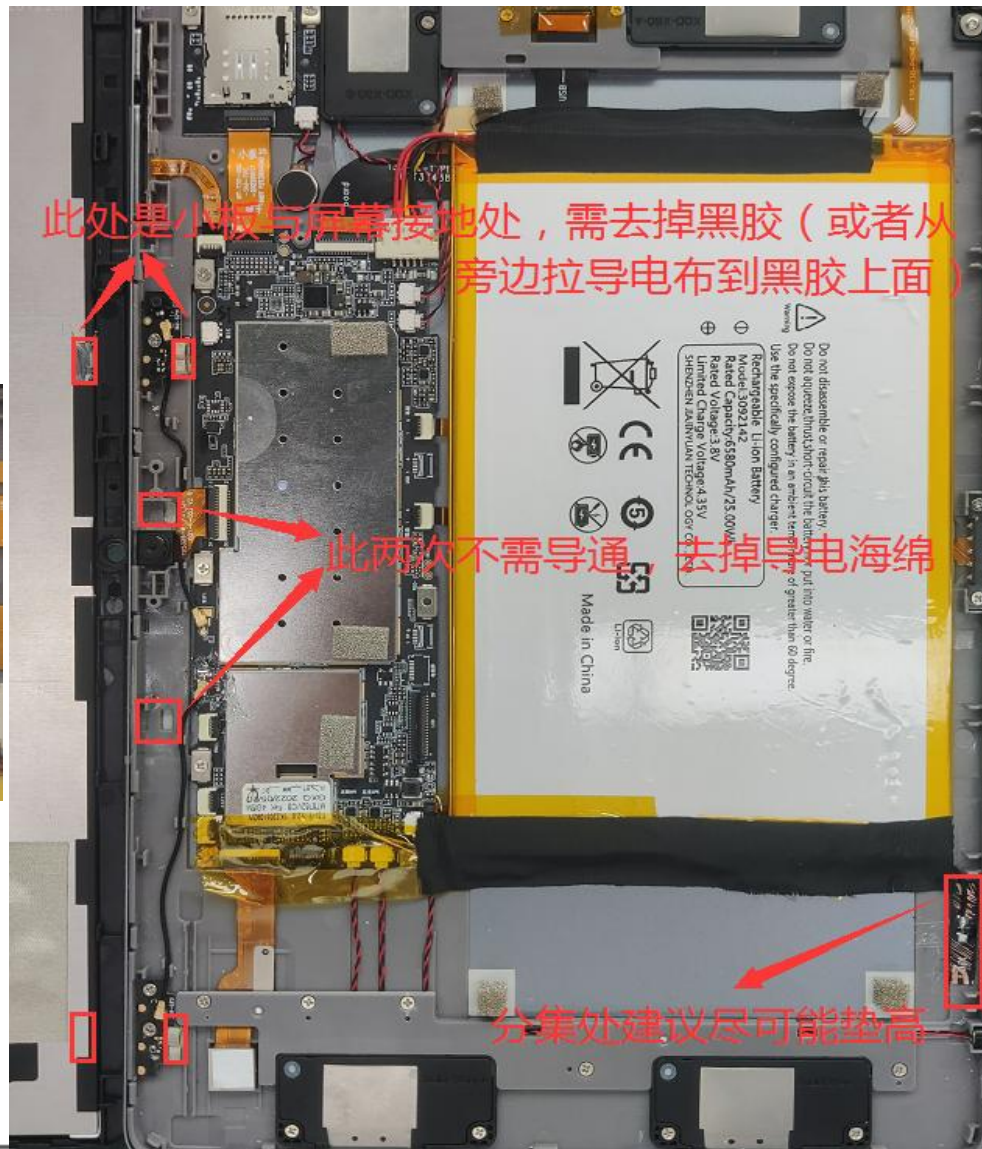


Attention should be paid to the poor conductivity of the whole machine, small board and back shell grounding, please handle it

Matters needing attention



屏蔽罩拉导电布灵敏度会有提升



此处是小板与屏幕接地处，需去掉黑胶（或者从旁边拉导电布到黑胶上面）

此两次不需导通，去掉导电海绵

分集处建议尽可能垫高

Summar i ze

1. Attention should be paid to treating the installed machine according to the environment in the report to ensure the consistency of the whole machine

Thank you!



**Shenzhen Address: 4th Floor, Building 2,
South Taiyun Chuanggu, Guangming Avenue,
Guangming New District, Shenzhen**

Tel: 0755-23984257

Fax: 0755-86090455